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ELECTRICITY on the FARM

NOVEMBER 1941

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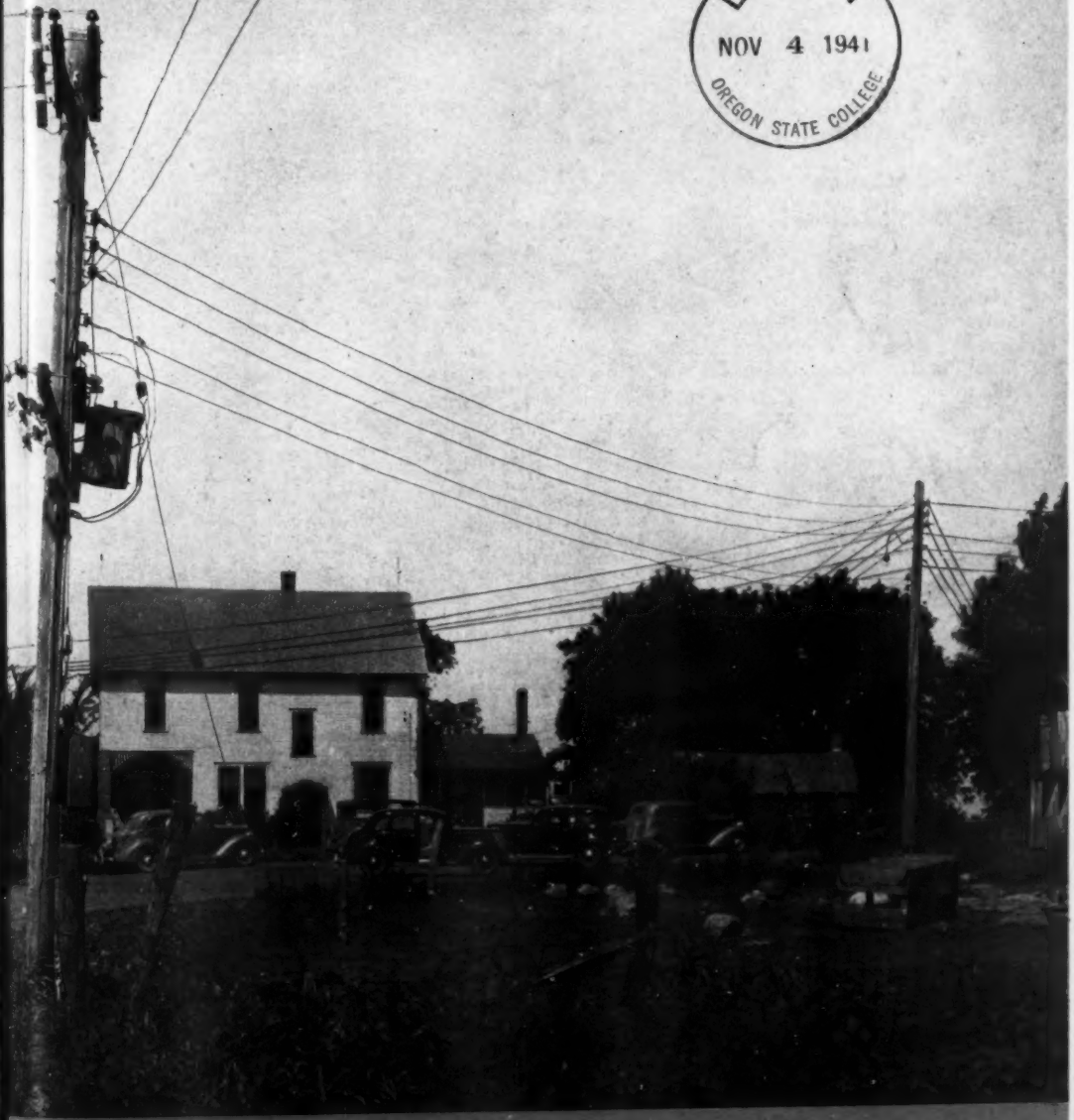

THE NATIONAL MAGAZINE OF RURAL ELECTRIFICATION

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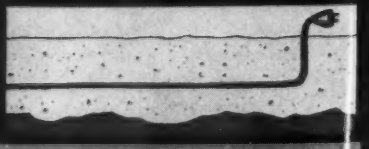
Your local dealer or electric-service headquarters can help you apply the proper equipment most effectively; or you can obtain additional information from the Rural Electrification Section, General Electric Company, Schenectady, N. Y.

Take Soil Heating and Sterilization, for Example—

An electric soil sterilizer provides an inexpensive, convenient way to rid soil of plant enemies—diseases, fungi, insects and weeds. Starting out with a clean seed bed gives plants a chance to make their best showing.

Soil-heating cable has numerous other uses—protecting pipes and valves from freezing, melting ice from eaves and downspouts, keeping concrete floors warm, and many others. Be sure to investigate this versatile equipment.

An electric hotbed, equipped with G-E soil-heating cable, need be prepared only once to be good for years. With it, plants grow faster and more vigorously because you *control* the growing temperature.



GENERAL ELECTRIC

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Editor's Chat

Farm Machines

Two months ago I had the pleasure of inspecting factories of six of the large farm implement companies of this country. I went through their plants, talked with the foremen, and heard their research men, designers and factory managers tell something of their problems and methods of manufacture and sales. The group of 116 travelling at the invitation of the American Society of Agricultural Engineers included deans and directors of engineering and agriculture, agricultural engineers, economists and upper class students from 39 colleges and schools of agriculture.

It would please any user of farm machinery to see the care and efficiency with which those machines are made. In the larger plants there are assembly lines similar to those in the automotive industry. Modern, automatic machine tools finish tractor cylinder liners, crankshafts and other parts to "tissue" tolerances—each piece just like every other. In some plants, cranks and bearing pins have their surfaces made extremely hard and wear resistant by automatic induction heating and quenching in electric furnaces, leaving centers tough to take the shock. No guesswork there. Combines and corn pickers as well as tractors are checked and tested by operating them after assembly to be sure they are adjusted and run properly.

While automobiles are built with the expectation that they will be replaced within a few years because of obsolescence (the thing that makes ladies clothes last only one season), farm machinery is built for longer life and so it can be repaired without a shop full of special tools. Patterns are available in the plants for making repair parts for any machine which has been built.

Some machinery plants have had labor troubles. They sound bad in the papers but they are usually promoted and sustained by small groups of agitators. The great majority of employees in these Middle-West plants are folks like we are, who much prefer working to striking and whose skill under modern methods of manufacture and inspection inspire confidence in the product of their labor.

One professor of agricultural engineering remarked, after a trip through an especially clean, orderly and efficient plant, "if farms were operated as efficiently and intelligently as farm implement factories, agriculture would present a different picture." That's a challenge!

Da Poosh Cart

"Mister, for why you braka da poosh cart?"

It was at 34th and Broadway. The 5:15 traffic was getting in its own way. A yellow taxi sailed down 34th and jumped to a stop near the curb, a "hair" from a street sweeper's pushcart. With concern and condemnation in his voice the sweeper demanded, "For why you braka da poosh cart?"

There are a lot of folks in the world who stand around waiting for droppings and shouting at the wheels of progress "For why you braka da poosh cart?" Then like the sweeper, when the shout subsides and an examination starts, they find the push cart is not broken; just shoved aside for a cart with a motor and driver's seat. And what has become of Tony, the cart pusher? He driva da beeg truck!

The Last Job

In answer to the question, "Should colleges do more to train young men to take jobs in industry?", H. P. Howell, in charge of sales training for I. H. C. said: "Colleges ought to work their students hard to eliminate the ones who should not be there. Colleges should prepare one for *the last job* he will hold; not the first one he gets after graduation.

Thanksgiving

If you think Thanksgiving has degenerated into "a day off," bandied about to bolster business, just remember that giving thanks is an attitude of heart and mind. It requires no designated holiday.

George Kable

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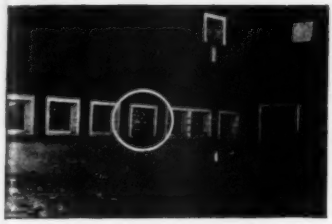


▲ View of outside of stable on R. F. Davis farm, Rutland, Vt. Fan unit is installed in the window shown in circle. No other alteration of the stable was made.

▼ The thermostatic speed control is placed out in the stable away from the fan.

You Can Ventilate That Stable

By RALPH J. BUGBEE*

IT'S against all the rules and regulations, but it works. After all is said and done, "it works" is what we want when we install a system of ventilation.

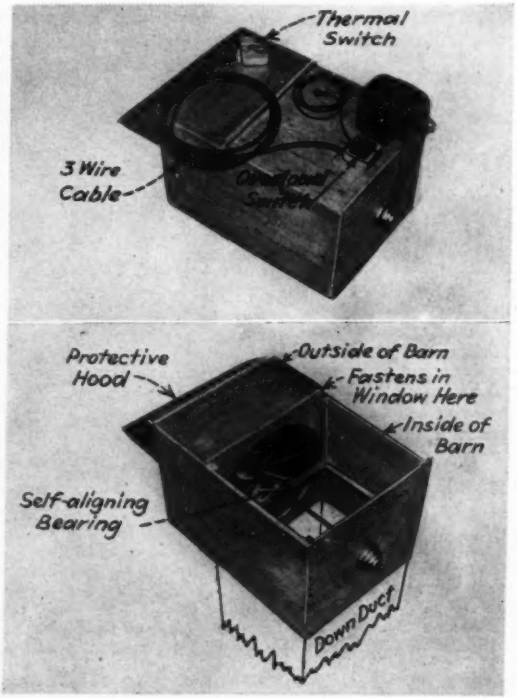
The idea that a stable can be greatly improved without the expense of insulation, without the construction of intake flues and other gadgets to control the flow of air, just doesn't fit into the old picture. To say further that a complete two-speed automatic electric ventilating system can be carried by one man from his car and be installed and operating in a couple of hours;—and have this one unit adaptable to the needs of a small herd or a large one is heresy. To have such a system cost only about $75 may be too much to believe.

But, by gosh, it's being done up here in Vermont, and if you will come up you can talk with farmers who have had two and three years of satisfactory experience with this type of ventilation.

Personally I know very little about ventilation and I tell our farmers so when an installation is being made. I tell them frankly that I don't know exactly where the best fan location in the stable will be and that I want the privilege of changing its location after observation for a few days. Yes, sir, it can be moved to different parts of the stable without having to rebuild the barn. Good point, don't you think? However, to date all of the units are where they were first located.

Vermont is rather chilly at times, and a few years ago I got to thinking about the steaming air that tumbled out of stable doors on cold mornings, of windows dripping water and frames rotting, of walls wet and clammy, and of air thick and foul. Farmers didn't like that sort of thing, and so far as I have been able to learn, neither did the cows; but farmers just didn't have the money necessary to install expensive equipment to correct the condition. I was intrigued by the problem, and soon my cellar workship began to hum.

In the first place, I reasoned that a stable was a box surrounded on all sides by an atmospheric pressure of about 15 pounds per square inch. Now, if I take air out of the box at a rapid rate, I am creating a partial vacuum in the box which the outside pressure will try to overcome. If my box barn were absolutely tight and I continued to pump out the inside air, it would soon collapse from the outside pressure. Fortunately, Vermont barns are not as tight as Vermonters themselves and always there are cracks around the windows and doors, in the walls, in the ceiling, and even the cat hole does its part. Now, if these sources of air penetration are already there, why not use them? They are not an additional expense. Some of them may want to be adjusted to do



The Fan Unit. Top view shows unit complete except for down duct which takes air from near the floor. The motor is connected to the circuit through an overload switch which will cut off the current in case the fan should ever stall from lack of oiling, etc. Motor and switch are mounted on a movable wood base for tightening belt. The thermal control with double throw switch which controls the speed of the motor is on the end of a 3-wire cable and may be mounted at some distance from the motor. Bottom view with motor and top removed shows the mounting of the fan in a circular opening in a partition in the box. Fan blades just clear the opening. The entire unit is built into the window frame after the window has been removed. The down duct is then attached to the fan unit.

*Mr. Bugbee, a former Ohio and New Hampshire county agent, and a N. H. poultry farmer for ten years, is now Agricultural Engineer for the Central Vermont Public Service Corporation, Rutland, Vt.

greater duty and some to do less, but always remember that outside air is going to come in even if you create a *small* vacuum. My observation is that air comes in through natural leaks in such a way that it is quite evenly distributed. Next I said that I would honor the people who had done the real research on the problem by accepting their general rules regarding the rate of air change. They say the air in a stable should be changed six times per hour if the cubical content of the stable is about 600 cubic feet per 1000 pounds of animal. Another rule is that every 1000 pounds of animal should get 60 cubic feet of air per minute. The ideal stable temperature to maintain is 50 to 55 degrees. It has also been determined that an average cow will give off in her breath from 1½ to 2 gallons of water per day, which is enough to make a depth of better than an eighth of an inch over the area of her stall. The average humidity should be around 65%.

Formula for Fan Size

To correct the bad condition in any given stable and comply with the requirements of the foregoing rules, it is necessary to have a formula by which the necessary volume of air movement can be determined and then select a fan to give that volume. Bearing all these rules in mind, we come to the following which for all practical purposes is accurate enough:

$$\frac{\text{Cu ft in stable} \times 6 \text{ (changes per hr)}}{60 \text{ (min in hr)}} = \text{cu ft per min for fan.}$$

On studying this formula, I found it could be simplified as follows:

$$\frac{\text{Cu ft in stable}}{10} = \text{Fan capacity in cu ft per min.}$$

From this it is evident that a stable 28 x 40 ft and 8 ft high with 8960 cubic feet of space will need a fan that will deliver 896 cubic feet of air per minute to give six changes of air per hour.

Let's check this rule another way. This stable should house 15 cows at the rate of 600 cubic feet of air space to a cow. Fifteen cows at 60 cubic feet of air per minute is 900 cubic feet for the stable or within 4 cubic feet of the result of our first rule.

You see, even the rule to use with this ventilating system is simple.

Up here in Vermont we have both large and small stables and so I reasoned why not get a large enough fan and drive it with a multiple step V pulley so that the speed could be changed to meet varying conditions and increasing the size of herds. It is a known characteristic of a fan that it's air delivery varies about in direct proportion to its speed. So why not put in a ¼ horsepower motor—large enough to handle the big jobs; then the little ones will be easy. That won't be wasteful of money or electricity because there is only about $3.00 difference in the price of the various two-speed motors up to ¼ horsepower, and because it is a characteristic of a motor to use current only in proportion to the load it is carrying. Then let's put on a switch with thermostat control and a double throw so that with a two-speed motor the fan will operate at full speed above a given temperature and below that at half speed. All of the equipment and material used is standard make and readily available.

Outer end of fan discharge with screened opening and galvanized protecting hood showing. John Pratt farm, North Clarendon, Vt.

Outtake duct in the Ralph Puriton stable near Bristol, Vt. It is placed over a window with the fan unit at the top of this duct discharging through the window opening. Ducts like this are built below the fan unit shown in another illustration. This one has a hinged door at the top front and one at the botom. In the winter time the bottom door is opened and the air taken from near the floor. In the summer the top door is opened and the bottom one closed to take warm air from the ceiling.

By using a 4-step V pulley on the fan arbor, a wide range of fan speeds is available. An overload switch which opens both sides of the electric circuit is an essential safety feature.

The outtake fan unit is made of ¼" and ⅜" plywood and is 22" square outside with a 20" bucket type fan. This size was decided upon because most stable windows where the fans are placed, have 22-inch casings or larger and because one 20-inch fan will handle most stables. I have found this type of fan to be quiet; it does not load up excessively with dust, and is inexpensive. At 1140 RPM, this fan delivers 2920 cubic feet of air per minute which is sufficient to handle a stable with about 60 cows, bulls, and young stock. (For easy figuring, I count the bulls and calves. Two calves equal one cow). In the following table it is easy to see that a wide range of applications can be had from this one unit.

Fan Speed Ratings

Motor Pulley....	1¾"	1¾"	1¾"
Fan Arbor Pulley	4"	3¼"	2½"
Full speed RPM.	754	930	1200
Full speed CFM.	1965	2400	3000
Half speed RPM.	377	465	600
Half speed CFM.	982	1200	1500

It is easy to change the belt from one pulley groove to another because the motor is on a sliding or hinged base. Apparently plywood is standing up all right after three years as a duct material. Nobody knows how long the fan and motor will last, but with proper care, it should be many years.

The two-speed feature in the thermostat is most desirable. Under this system when the stable temperature gets above the normal 50 to 55 degrees the fan operates at full speed, and with the greater output of air the stable cools down. When the temperature gets below 50 or 55 degrees, the fan taks out only half as much air, which allows the heat of the animals to build up the temperaure. At no time are the air movements in the stable interrupted. They simply vary in speed. This is

Ventilating Data

Date 1941	R. F. Davis Farm, Rutland, Vt. RFD Outside Temp. AM	PM	Stable Temp. AM	PM	Stable Humidity AM	PM
Feb. 10	2	24	55	55	69	68
11	10	24	56	57	70	69
12	14	28	57	57	70	69
13	22	31	57	59	68	70
14	30	38	62	62	74	71
15	36	28	62	59	71	68
16	12	14	57	56	67	68
17	8	20	56	56	69	67
18	14	20	56	55	66	65
19	14	24	56	55	68	67
20	13	30	56	56	69	66
21	20	30	57	58	67	68
22	28	25	58	58	68	68
23	26	23	58	57	68	65
24	12	30	56	57	66	66
25	17	14	57	57	66	64
26	12	16	56	55	65	65
27	0	16	54	55	66	66
28	6	..	55	52	66	67
Mar. 1	..	28	..	55	..	67
2	24	30	57	58	66	65
3	31	38	57	59	66	67
4	14	12	56	56	65	68
5	6	..	56	56	68	66
6	20	18	57	57	67	64
7	6	29	56	57	66	66
8	26	28	57	57	65	66
9	22	20	58	57	65	66
10	18	22	57	58	64	66
11	19	30	56	57	65	67
12	25	20	59	57	64	64

important. This system does away with the need for a damper in the duct, which is always a source of trouble and a brake on the air delivery of the fan.

I am presenting a typical record of performance of the ventilating installation at the R. F. Davis farm near Rutland, taken during the month of February 1941. Mr. Davis built his own outtake flue in 1939 and I helped install the fan, motor and off-and-on switch at a cost of about $35. That winter, he used a washing machine motor he had on hand and controlled it manually. In this case, we did not use the step pulley, but figured the proper speed for his barn. The results were so good that in 1940 he had me put in the two-speed motor and thermostat control at a cost of about $22. Thus for a cost of $57 plus his own labor and materials on hand, he has a stable ventilating system that has not varied the stable temperature more than 8 to 10 degrees while outside temperatures have varied from 50 to 60 degrees during the season.

About half of the barns that have this system have never had any form of ventilation and about half have had gravity systems that didn't work satisfactorily. One barn 110 feet long had $1600 spent on it a few years ago for insulation and a commercial gravity system which never worked. Last winter I put one unit in one end and this winter will install another in the opposite end. In doing this, we have practically discarded the old flues and depend on natural barn leakage. One hundred and fifty dollars is going to do what $1600 failed to do for this farmer.

It cannot be said that this system and equipment is perfect, but I do know that with a *reasonably well-built stable* and a little judgment, a much better stable condition can be produced at the least cost for equipment and operation yet known.

As for cost of operation, I find that the average is from 75 to 90 kw-hr per month, which in our territory costs less than $2.

EDITOR'S NOTE. At a recent meeting of the American Society of Agricultural Engineers where Mr. Bugbee demonstrated this system, it was brought out that any good ventilating fan could be used in place of the one described. If used in the wall without a duct, it should be placed near the floor; otherwise it should be near the top of the duct. Some engineers prefer to install a fan which will deliver just the right amount of air for the stable where it is installed and run it continuously at constant speed. In this case the cost of installation would be further reduced by using a single speed motor or fan and eliminating the thermostatic two-speed control. Mr. Bugbee favors the two speeds.

Chicken for the Army

The army will have quick frozen chicken while on maneuvers. Although several million pounds of beef have been prepared in this way for maneuvering troops, quick frozen chicken has never been made available to the army in large quantities.

Spray Painting

This is a picture of R. B. Sparks painting a silo on a farm near Rockville, Indiana. He is using an inexpensive paint spray outfit. Such outfits are becoming increasingly popular on farms. The spray equipment has been improved, and with a little practice, one can do an excellent job on buildings, fences, machinery, furniture, etc. It is significant that practically all factory painting of automobiles, furniture, machinery, etc., is now done with spray guns.

Equipment that Boys Can Make

Here are just a few suggestions for 4-H and FFA boys in connection with their Club and shop projects. Most of these things can be made in the farm shop or at school and they are practical and usable, and some of them are money makers. Special parts, when needed, such as brooder heating units, are available.

Egg coolers—evaporative type
Brooders—radiant or fan type
Base, handle and protective switch to make ¼ hp motor portable
Battery operated motor—toy, to learn principles
Yard lights
Flood-lamp frame
Poultry water warmers
Electrify hand lawnmower
Rig up grindstone, seed cleaner, churn, ice-cream freezer, etc., for ¼ hp motor drive
Small stationary spray plant
Garden light traps for insect pests
Printing box for photographic dark room
Good wiring and voltage-drop demonstration board for your school, Co-op or wiring contractor.

The boy is holding a typical 150-watt immersion water warmer with thermostat for keeping water temperature at about 50 degrees.

A pan or "plate" type heater. Plugs into any convenience outlet. Place water container on top of it. Keep pan up out of litter.

ICE vs. MILK and EGGS

By GEO. W. KABLE

It Is Time to Be Thinking About Water Warmers for the Hens and Tank Heaters for the Cows.—How They Can Aid Defense Production

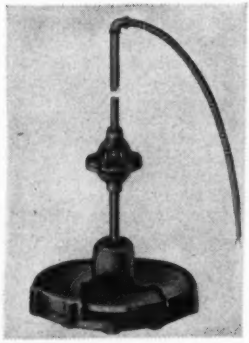
"ICE vs. Milk and Eggs" may be putting the matter a little strong, for some one gets out eventually to break a hole in the tank ice and thaw out the poultry fountains; but stock does not relish ice water, especially in icy weather. Cows and hens drink only enough 32° water to "get by," and records show that under these conditions production slumps.

This year the cows and hens are being called upon to do their utmost. The little aids to production which will enable the cows and hens to step up yields 5 or 10 per cent and maintain health and weight while doing it are the ones which are going to count most this winter.

In progressive poultry plants where 50 or more hens are being kept housed, lights are now being used to stimulate production, or they will be used a little later to bring more and better hatching eggs. This means that birds are feeding early, too early for the poultrymen to be up, and that along with the feed they will want water.

Various electrical devices have been used over a period of fifteen years to keep water in the hen house from freezing and with the icy chill taken off. Small, low wattage stoves, lamps under the drinking pans, soil heating cable where there are many troughs to be warmed, tall cans full of dry sand containing lamp bulbs and special heaters made of pipe are all in use. The heaters which have proved most popular, however, are small immersion heaters about eight inches long which may be placed in most any size or shape container and plugged into a convenience outlet. These heaters are of low wattage—70 to 150—but what is more important is that they have built-in thermostats which turn the current on and off to maintain a desirable temperature of the water. The operating cost is thus kept low and the heaters require very little attention.

Keeping good drinkable water before the dairy cows presents a somewhat different problem. Water must be available in much larger quantities. Running water and drinking bowls at the stanchions is highly desirable from the standpoint of milk production and having a sanitary supply always available which enables the cow to drink all she needs when she needs it.



A cast and wrought iron 1000-watt, thermostatically controlled stock tank heater. The cast base contains a sealed-in 1000-watt Chromalox ring heater. The enlargement in the pipe is the location of the Spencer bi-metal thermostat which holds the temperature between 42 degrees and 52 degrees. A ground wire is fastened to the inside of the metal housing.

If water is supplied to the herd in a stock tank, there are some management problems which deserve attention which have little to do with the use of electricity. The tank should be in a place where the cows can drink comfortably—out of the wind, slush and mud, and where they can drink leisurely. The summer tank location may be very bad for winter. Frequently a smaller tank can be placed in a shelter shed at the same level and piped from the outer tank which serves as a supply reservoir.

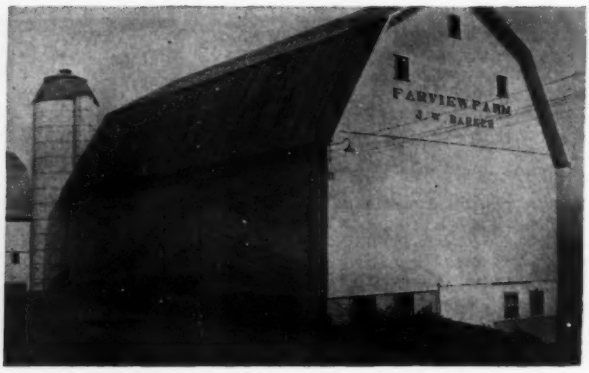
Small and medium tanks may be warmed satisfactorily and economically with electric tank heaters. These heaters may also be used in large tanks if the heater is surrounded by a barrel without heads, or a wooden housing which confines a smaller amount of water to be heated. In past years we have shown illustrations of a number of kinds of commercial and home-made electric tank heaters in ELECTRICITY ON THE FARM. There are several commercial heaters on the market this fall. Each year they are improved so operating costs are reduced.

In using stock tank heaters it should be borne in mind that the more protection that is given the tank from the cold and wind, and the smaller the amount of water that one attempts to heat, the less will be the heating cost. That is why the barrel with the heads knocked out, and placed over the heater *with the top edge of the barrel just above the water level,* will save heat.

Here are a few records of power used by 1000 watt, thermostatically controlled tank heaters on farms last winter.

Sunnybrook Poultry Farm, Hillsdale, Mich. Last 15 days of February. Outside temp. 8° to 40°. In

(*More on page 25*)



Left: A 10-foot length of conduit bent, to fit the conditions, light this step and yard. A switch at the door and in the kitchen controls this light. **Right:** By bending the pipe this lighting unit can be made to light the barn doors and eliminate objectionable shadows.

Yards of Light

By **B. P. HESS**, Manager,
Rural Electrification, Westinghouse Co.

OF all the uses of electric light, none gives more convenience, safety, protection, and all-round satisfaction than one or more properly installed yard lights.

Generally speaking, the "gooseneck" type of fixture is found most satisfactory. This can be purchased already formed or may be made of ½" conduit held rigidly in place by a mounting bracket. A weather-proof socket with a porcelain enamelled steel reflector is by far the most desirable. The reflector with its white lining directs the intensity of the light. These reflectors are made in different styles, but the shallow type is most desirable. They are also made in different sizes according to the wattage of the lamps. In most cases a 100-watt or a 150-watt size is recommended. Any yard light, since it is mounted high, will require at least 100 watts. If more than 150 watts is required, then it would be better to install two yard lights. Both of the above sizes take the standard low-priced bulb, either frosted or clear, the latter being usually preferred.

Plan your yard lighting at night. The paths traveled by the members of the family must be given due consideration, likewise, gates, fences, and buildings. If shadows are to be eliminated and full value taken of the light, then the fixture must be located not on the side but on the corner so that two sides of the building will be illuminated. Often two lights should be used if an area is to be properly illuminated.

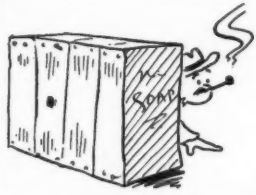
Since all yard lights must be mounted high, a remote switch is necessary. Too often this switch is found where it is most convenient to install rather than where it is the most convenient to the person using the light. Furthermore, convenience, safety, and protection are gained only when the light can be turned on ahead and turned out after you pass through the area that is lighted. This

(*More on page* 20)

▲ A pole carrying wires often makes an ideal support for a yard light. This 150-watt unit lights yard and garage. Controlled from garage and kitchen it is a real convenience. Also controlled from bedroom it offers protection against theft.

▼ In the cattle yard a 100-watt light is desirable. If there is a shed, then the lamp should be mounted so that some of the light shines under it.

" . . . and someone let out a blood-curdlin' yell that jumped me clean out of bed."



InVENtoR

Farmer Plummer "Smokes Up" an Electric Cat and Almost Loses a Wife.

By **PAUL R. PLUMMER**, R. 2, Eaton, Ohio

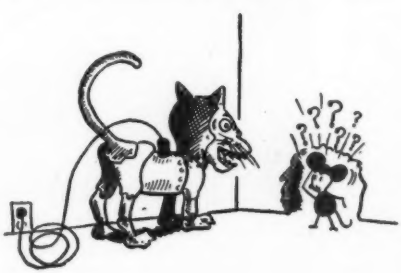
MICE are a gol durned nuisance. I no more than get 'em wiped out and get comfortably settled in my rocker 'till my wife opens the bureau drawer and hollers, "Lem, do somethin' about them critters."

I've thought and thought. Why onct I just set that mouse trap before me and lit my pipe and smoked five pipefuls turning that problem over in my mind. There's just got to be some new fangled way to catch them mice. I recollect that onct someone said that the world would beat a path to the door of anyone inventin' a new trap. Wal, I don't need a path beat to my poor, but I sure as heck would like to do away with the mouse problem once and for all.

But I'm not the kind of feller as just thinks. After five pipefuls I'm stirrin' about doin' somethin' about it. I alus like to tinker. Onct I fixed a gadget to feed the chickens automatic so I wouldn't have to get up. I'm strong for these labor saving devices. It gives me more time to smoke my pipe and think out my inventions. And it was just in such a way that I came about inventin' my supreme invention, the electric cat.

I'd been readin' 'bout them electric eyes, and I happened to glance over at the family cat which was gazin' at a rate hole pretty steady. All at onct she up an' sprang. Well sir, it struck me like that. I knew I had it. So I run down in the cellar and started to work. In 'bout a week I finished the catcher. She was a 'beaut'. It looked almost like a cat 'ceptin' I put extra strong teeth and a bigger mouth in it. Cats don't seem to have big enough mouths to me. How can you 'spect a cat to be efficient and catch big rats with as small a mouth as they have. Anyhow I improved on that much of the cat's anatomy anyhow. Well, I was ready for the tryout. Mind you, I had some adjustin' to do before I could set it to ketchin rats and mice, so I made a rough imitation of a mouse and tied a string on it. I set my 'lectric cat over in one corner of the cellar and got behind a box. Well sir, I just moved that mouse and that cat started to sneak up on it. I forgot to put rubber pads on its feet and I could hear each paw as it thumped down. I smoked a pipeful before it came to a stop. And do you know the dang thing stopped a full six feet away from that mouse. I hadn't figgered on that. I stuck my head out from behind the box to look at the cat, but forgot to twiddle the string, and that cat jumped. I'll betcha no live cat can jump that far. Well sir, it came down on the other side of the mouse. I seen that wouldn't do so I fiddled with an adjustment screw and got that electric cat to jump on a bulls eye every time.

I figured the time had come for a real tryout with a live mouse, so I carted the cat upstairs and set it down in the kitchen. Martha vowed she wouldn't live in the same house with that contraption. To tell the truth she got real het up. I've never seen Martha so wrought up in the nigh onto thirty years since we wuz hitched. I began to get hot under the collar too, when she said something about me bein' too lazy to set a mousetrap and smokin' so much tobaccy. Now I don't mind bein' called lazy but I do like to smoke my pipe, and I figgers all thoughtful men smoke pipes. Well sir, Martha put some clothes in a bundle and lit out down the road. That's the first time Martha ever done anything like that and I'm considerable upset 'cause I don't have any idea where she's goin' or when she's comin' back, 'ceptin' she said somethin' 'bout me mendin' my ways. Well, I cooked a snack fer supper and put the cat on the floor so I could eat. I was a little bit discouraged, and must've dozed off then all at onct I heard the kitchen door kinda squeek and someone let out a blood-curdlin' yell that jumped me clean out of bed. When I got my senses Martha was calling "Lem, Lem, take this thing off me" and when I finally got the lamp snapped there was Martha just 'bout as white as I ever saw anyone and that blamed cat had its teeth clamped on her laig an' was hangin' on. Martha just fell into my arms, acryin' and I had a heck of a time tryin' to convince her that it was just my cat.



Well anyhow, Martha finally forgive me and I'm thinkin now how I can change that electric cat into an electric watchdog. I've laid in a supply of tobaccy an' hopin' it won't run out.

Quarter HP Wood Saw

By M. A. SHARP

It is easy to saw wood with a simple device developed by the Agricultural Engineering Department of the University of Tennessee. Any front auto wheel and spindle may be used. Weld a plate to the spindle so it may be bolted to a 2″ x 6″- 8′ long, either flatwise or edgewise. Weld a 13″ arm on the wheel and mount the wheel, motor and saw as shown. One end of the 2″ x 6″ is supported by legs and the other end is fastened to the log. The fastening may be made of a ⅜″ flat bar bent, sharpened and bolted to the 2 x 6 as indicated in the sketch. In hard woods it may be necessary to fasten the bar down with a small lag screw. If it is, a crank welded to the head of the screw will help.

Cuts may be started with a hand saw, or a slotted saw guide may be attached to the log or to the 2 x 6. Saw cut must line up with wheel.

The bar which operates the saw should be about 3′-6″ long and may be made of flat iron pipe, or hard wood. The bar is fastened to the crank by a bolt which fits loose in the bar and is held firmly by nuts on each side of the crank. Weights at the bar end of the saw make it cut faster. The saw must be sharpened evenly and have plenty of set.

The V pulley on the motor should not be over 1¼″ in diameter, and a 9′ belt is needed. Direction of rotation must be so the saw is pushed toward the log at the top of the stroke. A 4′ or 5′ one-man saw works best.

At the log end of the beam is a switch which is opened by a string hooked over the switch handle and to the end of the log so that when the sawed block drops off, the motor stops.

To move to a new location, remove the saw and motor, turn upsidedown, and wheel to position.

"Spot" Heating with Portable Heaters

There are a lot of ways to warm spots electrically to keep comfortable. If the spot is small, like a cold foot or a sore muscle, an electric heating pad, or a lamp and good reflector may do the job. If it is a case of sleeping warm at night in a cold room without a load of quilts, the electric blanket is made just for that purpose. Then comes a whole line of electric heaters in which a lot of people will be interested this time of year. They include a number of radiant heaters which consist of a glowing electric element with a reflector behind it to direct the heat to the spot where you want it. They are good for baths in cold rooms or a little supplementary heat in the living room, the shop, or wherever one is working. These come in wattages of from 500 to 1000 or more.

Now if the "spot" you want to heat is a little larger, like the whole bathroom or a study room or some extra heat in a sick room, there are several other types of inexpensive electric heaters available. The fan type heater is quite common. The heating element does not get red hot because a small fan blows a blast of air across it into the room. This blast sets up a circulation of air in the room and tends to heat the whole room. There are also two types of convection heaters which do the same thing. In one of these there is a large exposed electric heating element arranged so that air enters it at the bottom, passing up through it and circulating in the room. Cold air, being heavier, enters at the bottom, and on being heated soars to the ceiling. This stirring warms all the air. The other type of convector is the electric-steam radiator. It contains a small amount of non-freezing liquid which is boiled by an electric heater immersed in it. Steam fills the radiator, and you have a regular steam radiator but light enough to be carried around and plugged in wherever there is an outlet.

Defense Production

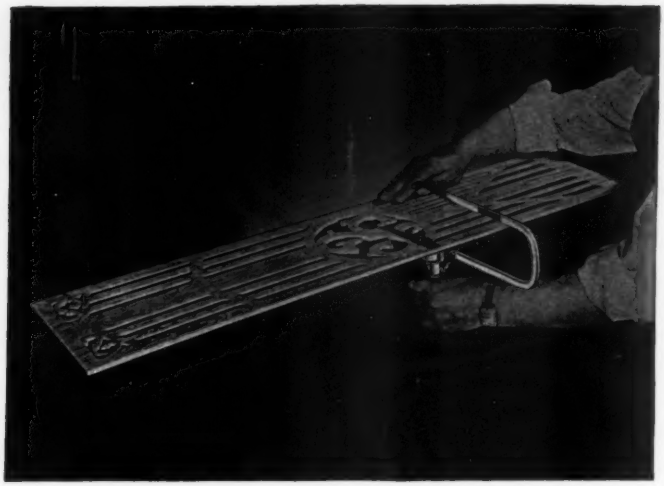
"We are planning to send the British during 1942 dairy products that will require between 4½ and 5 billion pounds of milk; about a half billion dozen eggs; 18 million pounds of poultry meat—chicken for the most part; almost a billion and a half pounds of pork and lard. We have promised to send almost a million and a quarter tons of fruit and more than 2½ million cases of canned vegetables. . . . Our own people want to buy more of many foods than they have been buying. . . . What is the answer? It is very plain. American agriculture must adjust its production to supply the increased needs." Claude Wickard, Secretary of Agriculture.

Soft, Silky Wool

British research financed by Australian, South African and New Zealand wool growers is reported to have made rapid progress recently toward a process of making wool unshrinkable. Another development is the means of putting a mercerized finish on unshrinkable knitted underwear by the enzyme or papain process so there isn't an itch in a backload.

Clips Wings of Bees

To prevent her bees from swarming—keeping old queens from departing from the hive with a few thousand of her followers—Mrs. Ruth E. Humphrey, a woman beekeeper of Warsaw, N. Y., clips the wings of her queen bees every season.



Scroll Saw Gifts for Christmas

For more than forty years boys have had fun and developed an interesting skill in making things with scrollsaws. The things that can be made are many: shelves, brackets, magazine racks, what-not shelves, clock frames, models, doll furniture, silhouetted portraits, — and jigsaw puzzles. My first scrollsaw was hand-operated; next I had a foot power machine. When going good, they cut at about 120 strokes per minute. Now electric saws are available which make a smooth cut in wood up to ¾ inches in thickness at 7200 strokes a minute. Such saws not only make good gifts, themselves, but they may be used to make acceptable gifts for others.

These little electric saws weigh just an ounce over a pound, have a clearance between saw and back frame of 9½ inches. They are powered with an electro-magnet which uses 75 watts,—less than a reading lamp. It will saw forward or sidewise in either direction by changing the saw in the holding jaws. Since the frame is held still and merely used to guide the saw in sawing, it is possible to saw easily in curves, on the bevel or warped surfaces as model airplane propellers. The saws cost under $5.

Honey Hill Farm Adopts S-4 Lamps

By N. D. HERRICK
Boston Edison Co.

Honey Hill Farm, in Hopkinton, Massachusetts, is a farm that has built itself, in the true sense of the word. It is no rich man's toy, and every building and piece of equipment is the result of the labors of Ben Karaian and his family.

When a major expense is contemplated, it is studied from every angle, and then if it appears practical, the money is spent and the equipment put to full use.

With the declining availability of good cod liver oil fortification for feeds, Mr. Karaian began to study the possibilities of electric lights for ultra violet light generation.

On consultation with his power company rural service engineer, it was decided that the proper procedure would be to make a test installation on his own farm, where the equipment could be managed according to his own practices of feeding and management.

Accordingly, four ultra violet lamps were installed in four of his pens of young birds. Feed similar to that being fed check pens was used. It soon was apparent that the birds being treated with ultra violet were growing more evenly and faster than the check pens. Mortality was lower, and there was a general appearance of better bird condition.

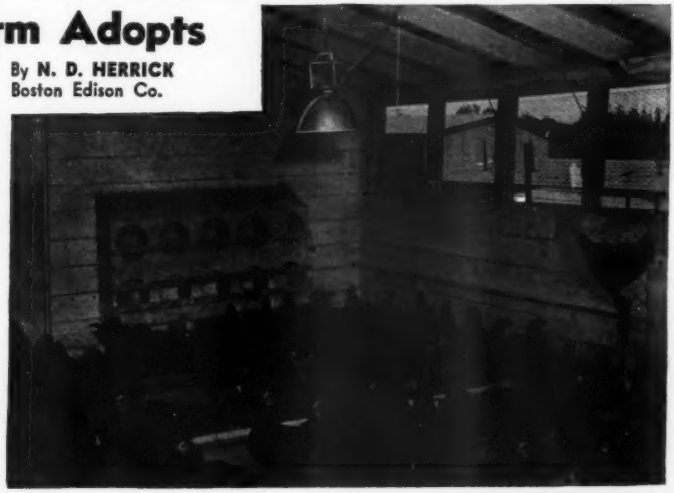
As soon as this difference was apparent, a dozen of the newer type S-4 ultra violet light units were purchased. Subsequently a second dozen were installed. The results are entirely satisfactory to the owner. The lamps are used during scratch feeding periods for about two hours per day.

A large portion of the eggs and meat raised on this farm are sold from their own trucks at retail in nearby Boston.

For many years they have semi-scalded their birds previous to plucking. Last spring they installed modern controlled electrical semi-scalding equipment.

A one-ton feed mixer is also in use. Control of the ingredients making up the poultry feeds, and lower prices in quantity buying of grains, were the principal reasons for the installation of the feed mixer.

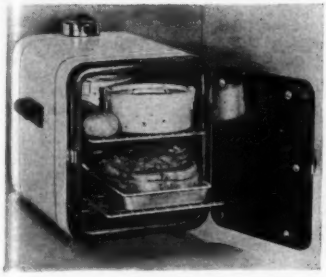
It is interesting to find that the farmers who are really doing well and making money are the ones who are making full use of their electric service. In most cases, a large electric bill indicates a farmer who is operating economically and successfully. Honey Hill is in this class.



Electrical Housekeeping

Edited by
GAIL MEREDITH

Dinner for Thanksgiving



THERE is no use pretending we always have turkey for Thanksgiving dinner. We don't. We love the tradition of the special season for gratitude, of sharing the day with others, and of having special foods for the occasion. But it is a couple of hundred years too late for my husband to go out in the woods and shoot a couple of wild turkeys as they take off from their roost in the bare branches of a tall maple. And we do not raise turkeys ourselves. That leaves us on the buying end, so we often have pork instead. It has always been something of a comfort to me when I've been trying to plan our Thanksgiving dinner to remember that after all, the colonists feasted on what they had. Which isn't a bad tradition in itself if you look at it closely.

And it is entirely possible that one of those Pilgrim housewives, hurrying to the table with a crackling brown turkey, fairly bursting with juicy richness, set it down with a sigh, and murmmured to her husband, "Oh, dear, I do wish we could have a nice roast of beef to give them!"

If you have a turkey cooped up waiting for the last Thursday of the month, good enough, but you might as well skip this, for these are blue prints for three dinners with never a turkey in one of them.

First Non-Turkey Dinner

Split pea soup
Baked potatoes on half shell
Stuffed pork shoulder — Fried apple ring
Beets in cream — Cornbread
Stuffed tomato salad
Lemon chiffon pie

You can make that pork shoulder extra good with your favorite dressing. When I say corn bread, I'm thinking of thick, yellow squares, hot from the oven. If the entire family clamors for pie, you'll probably have to give in, though a sherbet or a dish of fruit would probably be the more comfortable finish for a dinner like this. The delicate tartness of the lemon chiffon pie is a good compromise.

The beets in cream are something special. The friend who gave me this recipe has to buy her beets at the market and she gets two bunches. That will serve eight. She says a medium sized can of beets would do just as well. In fact when I make them that is what I use, because the real trick with them begins after they are cooked and chopped quite small.

She heats two tablespoons of salad oil and adds a tablespoon of flour and three of vinegar, stirring until the mixture begins to thicken. Then she folds in the beets, adds two tablespoons of sugar and seasons them with salt and pepper to her taste. Just before she takes them to the table,—and you can see that they could be ready a little ahead of time without taking much harm — she adds half a cup of thick sour cream. Then she sets the dish over water to keep it hot if it isn't all served immediately, because it must not boil.

Second Non-Turkey Dinner

Onion Soup
Spiced beef pot roast
Browned potatoes
Baked bananas
Baked squash
Shredded cabbage salad
Corn meal pudding

Dredge four pounds of beef with flour, then brown it all over in hot lard. Season it with salt and pepper and lay two sliced onions over the top. Add half a cup of vinegar, two bay leaves, and five whole cloves, and let the meat simmer for about three hours. Not boil, simmer mind.

For the baked bananas, just dip them in melted butter and lemon juice, then bake them for about twenty minutes in a 400 degree oven. That is just a little less time than you need for your blueberry muffins, and it won't be crowding them either.

This my mother-in-law's recipe for corn meal pudding. Heat one quart of milk in a double boiler. Stir in four tablespoons of corn meal and let it stand until it is cool. Then add half a cup of sugar, two tablespoons of butter, a quarter of a teaspoon of salt, and a quarter of a teaspoon of nutmeg, and four eggs, well beaten. Mix well and bake in a 350 degree oven for about two and half hours. When half the baking time is up, open the oven door and pour half a cup of milk over pudding.

Sometimes she used to make it

HOW TO GET THE EXT

ELECTRICAL HELP IS SAVING TIME AND MAKING WORK EASIER FOR FARM FAMILIES

"We bought a Westinghouse Washer and an Iron," says Mrs. H., of Kentucky. "Now our washing and ironing are done the same day and no one is half as tired as three used to be when we took most of two days to wash and iron for our family of 7. Another appliance that saves much time and many steps is our electric water heater."

Mrs. P., of New York, now has an extra hour each day. "My Westinghouse Range," she says, "has reduced the time required for getting meals from over two hours a day, to just a little more than one hour."

Electrical help saves money, too. Mr. B., of Ohio, writes: "Before getting a Westinghouse Milk Cooler our milk rejections were running as high as $1.28 a day in hot weather. During July we cooled 7 cans (10 gallons) per day at a cost of $3.36, an average of only 1.6 cents a can."

What Westinghouse Farm-proved help is doing for others, it can do for you. Your Westinghouse dealer will gladly help you select the appliances and equipment that will serve you best.

HOW TO MAKE A DREAM COME TRUE

Here's the way Mrs. B., of Ohio, realized her dream of getting the attractive all-electric kitchen shown above. It was not modernized in a day, nor even in a year. Her first purchase, several years ago, was a Westinghouse Refrigerator. Later on, the Roaster-Oven and several small appliances were added, each helping to make work easier. Finally, the sink, cabinets and Westinghouse Electric Range were put in, all in accordance with the plan worked out when the refrigerator was bought. Ask your Westinghouse dealer how to get a free plan for YOUR all-electric dream kitchen. There's a plan to fit both your needs and your pocketbook.

TA HOURS *YOU NEED*

"Until I used a Westinghouse Ironer, no one could have made me believe that ironing can be a pleasure," says an Illinois farm wife. "Now, I actually rest, as I sit comfortably to do the ironing." Best of all, users everywhere say that with a Westinghouse Washer and Ironer, it's easy to do a big washing and ironing, both in one day. Records show that ironing the same size wash with the ironer uses no more electricity than is required by a hand iron of the latest model.

Since installing her Westinghouse Electric Range, Mrs. O., of Pennsylvania, has found that time spent in getting meals for four grownups and two children has been reduced a great deal. Baking results are so good, compared with the old nonelectric stove, that Mrs. O. is again baking all her bread, cakes, and other pastries instead of buying them. "Scrumptious," says her family. "Yes, and it costs less, too," says Mrs. O.

See Your Westinghouse Dealer

Farm - proved Westinghouse WIRED HELP, instead of extra hired help, may exactly fill the bill for you. A few minutes saved here, an hour there, easily can add up to a whole day's extra time each week.

If you are working long hours—if hired help is hard to get—see your Westinghouse dealer without delay. It costs you nothing to look at his line of Farm-proved appliances and equipment; you may gain many timesaving ideas.

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Westinghouse

ELECTRICAL PARTNER OF AGRICULTURE

My Sewing Machine Earns Me Money By Making Doll Clothes

August Contest Winner

"Sewing at home and mending on the machine when otherwise the article might have to be discarded, saves countless pennies yearly, but here is the way I sewed to earn pennies that I might also save them.

"I was waiting to make a small purchase in a neighborhood art and needlecraft shop one day, when I heard a customer say: 'Where did you get that adorable doll's dress?' The shopkeeper, an elderly woman, answered, 'I've been getting them from a young woman who has recently gone East, and as she has decided to give up sewing I suppose I won't be able to get any more.' 'Well, I must have this one,' the customer said, and a few minutes later walked out with her bundle under her arm. As she did so an idea walked, as you might say, into my mind. Why couldn't I make doll clothes and sell them? I had been trying to think of a way to make a few dollars for some time, but with two small children, I knew that whatever I did would have to be done at home, and I didn't seem to have much talent worth the dollars I wanted. And here was the idea just ripe for snatching.

"'Do you take many articles on commission?' I asked. 'Plenty,' said the shopkeeper; 'these doll things, for instance. I've sold caps, coats, underthings and knitted articles, particularly around Easter and Christmas. I'm sorry my Doll's Dressmaker—that's what I called her—moved away.' 'I wonder if you'd let me try,' I said timidly. 'I've made things like that for Susie Lee—I mean my little girl's doll.' 'Make a few things and bring them in,' the woman encouraged; 'it won't do any harm.'

"To find out what the well dressed doll was wearing that season I made a trip to town and visited the big department stores, buying a few patterns I thought would help me and a stock of tiny buttons, lace, thread and remnants. It wasn't long before I was busy cutting and sewing and really interested. I found it didn't take long to make or cut out the small dresses and underthings, but that it did take patience to set in tiny sleeves, make wee collars and small seams. However, one soon gets the knack and can turn out an incredibly large supply of 'creations' in one's spare time. One must always use new materials, of course, and keep everything spotlessly clean. I tried to give them all a smart, modern touch by keeping up with modern styles and even made ensembles — matching coat and dress outfits. I finished them neatly and gave each a good pressing so that they looked crisply fresh. I trimmed with lace, ribbons, buttons, braid and anything that I saw in the shops that looked pretty and appropriate.

"I charged various prices according to materials and work, and had no trouble selling on commission. I tried to sell the large department stores, but found most of them bought their doll clothes from eastern manufacturers. One store encouraged me to come back in the early fall, but when I did I found another woman had beaten me to it and was selling her entire output at 50 cents apiece. This sounds like a small sum, but when you consider how short a time it takes to make these tiny doll clothes and how little the materials that go into them cost, it seems a worthwhile job to add to those that can be done by a woman in her own home.

MRS. H. G. WOODARD
Route One, Box 573,
Everett, Wash.

with a cup of raisins, too. If you will put it in half an hour early, it will be out so you can bake the muffins and the bananas at a higher temperature.

Third Non-Turkey Dinner

Hot cider
Lamb shoulder with sausage stuffing
Mashed potatoes — scalloped tomatoes
Spiced prunes —Hot bran muffins
Molded carrot salad
Strawberry ice cream

For the sausage stuffing, fry a quarter of a pound of bulk sausage with two tablespoons of grated onion and two tablespoons of chopped parsley, stirring it constantly until the meat is cooked so it separates in little particles. Add a cup of bread crumbs. Salt and pepper to your taste, and moisten it with enough meat stock or water so it will pack well. Skewer the opening shut, and bake the lamb at 300 degrees, allowing 40 minutes to each pound of meat.

Slices of baked orange with little dabs of mint jelly on top of them will go equally well with the lamb. Current jelly is next best after mint, I think.

There they are. Three dinners that will look pretty, taste good, and cost —well, not too much, we hope.

Turn About's Fair Play

It's a smart woman who knows when to be lazy. But anyone can learn it who irons on an ironing

machine. In a comfortable chair with a radio at your elbow, the heaviest work is lifting the clothes from the basket and spreading them flat on the roll or pad. Then the ironer takes over and supplies the heat and the pressure and the pull to smooth out sheets, to put a sheen on tablecloths, and to give a professional finish to shirts.

In this co-operation you surely come out on the easy end, supplying the brains for the work. You have to do the planning and steer the stuffs through to the best advantage, but that is easy compared to standing beside a board and pushing a hot iron over acres of sheets.

Have you ever watched the number of times you lift an iron in doing some garment or linen?

A friend of mine counted each time she lifted her iron in ironing three 10" napkins. It was exactly 27 times. She was using a six-pound iron, so she figured that she had lifted and pushed 162 pounds to iron those napkins smooth.

If she had had a four-pound iron, she'd still have lifted a weight greater than a good sized sack of flour in doing just those three napkins that were not any big part of her ironing, either.

And she stood up to do it.

Takes Less Than Half the Effort

Machines that test such things in the laboratory report that it takes less than half the effort and energy to do your ironing on an ironer. That is doubly important these precarious days with so many outside jobs clamoring to be done.

The second advantage an ironer offers is the saving of time. How much it will save depends on you and your ironing. The flat work makes up from 70 to 80% of most family washings, and the flat work goes through as fast as you care to send it.

Some one with a mind for figures told me one time that seven women with seven irons could just about cover the area some of these ironers smooth off at one clip.

Ironing dresses may take as long on the machine as it would take by hand, but even if it does, a woman would still be ahead, because she was sitting down and it was the ironer that was doing the work all the time.

Some women always do dresses and their thin silks with a hand iron. Some women begin them on the ironer and put the finishing touches on the garments by hand. And still others maintain that they can do everything in the laundry basket on the machine.

An ironing machine is kind to fabrics of all kinds, because, like other electric irons, it has controls to adjust the heat to the fabric you are ironing. That is going to be increasingly important as we feel the growing need to save materials, to wear clothes longer, and use household linens as long as they will hold together. We cannot afford to hasten the wear by careless handling.

Good ironing, by hand or machine, does not just happen. It comes through planning and effort. It is no time to be lazy when you are learning to use a new ironer. Then is the time for study, for careful watching of the way a skilled operator handles her clothes in the machine, and the time for diligent practice. These are the steps to skill.

Easy ironing begins as far back as the last rinse water. If I wanted to be fussy, I'd say it began with the selection of the clothes the family wears, but I don't. We'll skip picking out styles that will iron easily and fabrics that take well to soap and water. We'll start with the last rinse water and have a mind to the way we run the clothes through the wringer. That is the place to prevent wrinkles. Fold sheets and tablecloths evenly so they will not pull cross wise, and guard against any unnecessary folds as the clothes slide through. The wrinkles you can keep out of the clothes then you will not have to iron out later.

Clothes ironed on the ironer need not be as damp as those you iron

"Food will win the war and write the peace."

—*Secretary of Agriculture* WICKARD

Even in today's new type of warfare, it's the same old story—food wins wars! Faster, and still faster, you are asked to speed the flow of milk, meat, eggs, vegetables, and other products to meet the emergency. It's a universally accepted fact that water—plenty of water—helps to produce more of these food products the country needs. You'll step up production—and save needed hours—by letting a dependable Myers Water System give you completely automatic, low-cost water service. Ask your nearest Myers dealer.

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by hand. Linens require more moisture than cottons and fussy garments that it takes some time to iron take more sprinkling than plain ones.

Sort the clothes and pile together those that are to be ironed with the same thermostatic setting. This saves time and electric bills.

It is well to begin with the clothes that require a low temperature, the silks and rayons, and work up to the linens last.

While it is true that the heat in your ironer is thermostatically controlled, and when you turn the switch from the setting for linens to one for rayons, from high to low, it cuts off the current at once, still the heat does not leave the iron shoe instantly. It takes a little time for it to cool enough to be safe for fine baby clothes or sheer silk underwear.

When you've finished the last piece in the basket, be sure that the heated shoe is not left in touch with the roll. After it cools, clean the surface with a damp cloth and a household cleaner to get off the starch that may stick to the iron. Many folks rub the warm shoe with beeswax or paraffin to keep it smooth.

Some machines need to be oiled regularly, and some have the mechanism sealed in a permanent bath of oil. Your direction book will tell you what your ironer requires. If the directions say oil, you'd better watch the calendar and oil the motor regularly, as they say.

It is easy to iron on an ironer when you do your part in learning how.

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Dial YOUR FAVORITE RECIPE
Only Mixmaster has the exclusive, new MIX-FINDER Dial on which the ten every-day mixing needs are plainly indicated. You have the perfect mixing speeds at your finger-tips—*instantly*! You simply DIAL THE RECIPE. And you know the results will have that "success secret" of delicious food—even, scientific mixing.

YOU, too, can have cakes that amaze you—higher, lighter, velvety grained. You, too, can have whipped cream that stands up twice as long . . . smooth-as-silk mashed potatoes . . . popovers 60% higher than before. And lots more juice from the same oranges, too.

Only Sunbeam Mixmaster gives you *all* these marvelous features:—The Mix-Finder Dial that enables you to "tune-in" the correct mixing speed, instantly. A wide range of *even* mixing speeds that don't vary even when the batter thins-out or thickens-up. The POWERFUL mixer with big, easy-to-clean Full-Mix beaters.

Just think of it, there are over two million enthusiastic Mixmaster users. That's because Mixmaster does the tiring arm-work of cooking, baking, getting meals. There's only ONE Mixmaster. On sale wherever good electric appliances are sold. Be sure yours is a *genuine* Mixmaster.

Made and guaranteed by CHICAGO FLEXIBLE SHAFT COMPANY, 5600 Roosevelt Rd., Dept. 30 Chicago. Canada Factory, 321 Weston Rd. So., Toronto. 52 Years Making Quality Products.
Famous for Sunbeam TOASTER, IRONMASTER, COFFEEMASTER, WAFFLEBAKER, SHAVEMASTER, etc.

Thank God for the Electric Pump

(*January* 1941 *Contest Letter*)

"After the November hurricane struck, our visible damage was slight in comparison to some of our neighbors. We found our water supply was gone. Trees uprooted along with a clay bank slide out had taken many rods of piping on a very high, steep, side hill. The spring, over a mile as the crow flies, had supplied the three adjacent farms for nearly 100 years. Labor and material and expense were too much for any one of us alone to face at the time—and opinions differed.

With 20 head of cattle, a milk route, 400 hens—a family of six—we needed and used a lot of water and our one remaining spring was inadequate. Furthermore, it was so located that spring freshets drove our old river over it frequently and put the hydraulic ram out of commission. It didn't wait for the river this time—one night just after Thanksgiving in '39 a small twig raced down through the sieve at the spring, lodged in the valves and the pipes were frozen before we found it out. We were without water in a neighborhood without water. This was the first time we had ever experienced such a fate. Now we know how to sympathize with others. We melted snow and caught eaves drip until March, '40. My suggestion of driving a well in the cellar bottom met with derision. There was only one such in the valley I was reminded. Just a word of explanation here. Our land is rather dry—no swampy places anywhere. Years ago wells through this valley were the main water supply. Logically I felt there must still be water, though the wells were abandoned years ago. There were four on this farm in the 60's when my granddad purchased it. Determination (some scolding)—results? Water in quantity and quality. About six hours of labor—a well joint and fifteen feet of pipe—no forked stick—just intuition. Then came the electric pump into action and we've had water to our heart's content, even to pumping it 100 feet to milk room and barn. Eight little grand children—all under eight—frolicked under the hose spray during vacation this past summer and little four-year-old Pa-

November Contest

With most folks remodelling begins with a pencil and paper. If you were going to put a bathroom in your house next spring, how would you fit it in? Don't tell me you've never had time to think about it. When you are dusting, or washing dishes, or running the vacuum cleaner, your mind can be racing off to study the convenience, and saving, and comfort of having a fully equipped bathroom in your house. And the chances are it does—then, or at other times.

Where would you put it? How would you like to have the closets, and the mirrors, and the lights? What floor would you have, if you could change it? How would you heat the water you need?

All this comes under the heading of "*Planning the Bathroom*," which is the subject of our contest letter this month.

The writer of the letter we select gets five dollars. If we use any other letters, we pay the writers one dollar each.

The contest closes November 30, 1941.

Address your letters to Gail Meredith, 700 S. Mills St., Madison, Wis.

tricia said, "Now thank God for the electric pump, don't we?" I heartily agreed.

This last fall the fear of freezing our long line of pipe—100 feet between house and barn—prompted us to venture driving another well point near the barn. We did it well. The same logic—same labor, material and success. A small electric pump means the cows have water with ease and small expense. No more back breaking lifting or danger of freezing. For many reasons hired help is out of the question for us—electricity is taking its place It's cheaper, efficient and dependable.

F. M. P. INGRAHAM,
Riverside Farm,
Windsor, Vt.

Bull Fence

Several months ago we showed a picture of a bull pasture fence on a farm in West Virginia on which an insulated electrified wire was placed on the inside of the posts, and the woven wire fence on the outside was at a height which would permit a person in the pasture to roll under easily if the bull made a run at him. Prof. S. A. Witzel of the Agricultural Engineering Department, University of Wisconsin, now sends us this comment: "I have always been very much concerned about the safety for children, especially smaller children, around the bull paddock, and the fence as shown on the Gist farm would permit Junior to crawl under the fence, where he might be harmed by the animal."

This reminds us that Ed. Bayard, venerable editor in chief of the *Pennsylvania Farmer* and Regent of Pennsylvania State College has had an editorial in nearly every issue of the Farmer for years warning against vicious *and gentle* bulls and telling of some farmer killed or injured. The number of such killings, injuries and warnings has run up to the seventies, and last month twelve new ones were added from Wisconsin reports.

There is no telling when the gentle bull will suddenly turn killer. None is to be trusted. We cannot say whether it is best to fence Junior out, or to make it easy for you to get out, but we can say from the experience of others that it is best to stay away from any bull that is not securely fenced away from you unless you have the ring in his nose fastened to a good sturdy staff in your control. The physical hazard with bulls adds another favorable point to breeding associations and artificial insemination.

"STILL THE BEST"

"When our power line came in, I started looking at all makes of new electric sewing machines. In the end, I wound up with another Singer. It's still the best for my money!"

Available in the U.S.A. only.

"Tuck-away" miracle. Have you seen Singer's newest portable machine that fits into a folding table? The table "extends" to double length for cutting and sewing. Complete outfit folds into a closet. See all the new machines at your nearest Singer Shop, and ask about trade-in allowances. Or, drop us a card for a demonstration in your home. There's no obligation.

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Check Your Farm Equipment

This is the last call for the winter check up of farm equipment. Batteries on trucks or tractors in winter storage should be removed to the farm shop or basement for monthly battery charging service. Batteries low in charge freeze easily. Check spray and irrigation pumps to make sure that all water has been drained, leaving the pet cocks open to take care of condensation moisture.

Bring in the field machinery and put it under cover. Many machines deteriorate more by exposure outdoors during the non-use period than through actual operation. Before storage, thoroughly oil and grease all bearings and give polished metal wear surfaces a coating of grease or used crank case oil. Fertilizer equipment should have particular attention. All fertilizer should be removed, the machine parts water hosed under pressure—many farmers use the spray pump for this purpose—and give the parts when dry, a very light coating of light machine oil. This can be applied with a hand spray gun.

This year particularly it is desirable to make a repair check list as the machines are stored, ordering the necessary parts immediately. Prices are likely to go up, manufacturers are in a better position now to supply you than they are likely to be next spring, and the winter months give an opportunity for their installation in readiness for the spring rush season. Ordering parts now will save both time and money.

W. C. Krueger, N. J. Ext. Service.

DELCO WATER SYSTEMS

AN INVESTMENT IN HEALTH AND HAPPINESS THAT PAYS FOR ITSELF

There is nothing that will bring your entire family more real comfort than running water. Why not have it now when a Delco Water System will pay for itself on any farm quickly by saving time, increasing milk, egg, and vegetable production and helping fatten stock.

For the past 25 years Delco and General Motors Engineers have been studying farm water system problems and constantly trying to build greater value into Delco pumps. Today they offer you deep or shallow well pumps with capacities from 180 to 1600 gallons per hour which will, not only give years of care-free service, but are so economical both to buy and operate, that they soon pay for themselves and then pay you dividends for years and years.

Now is the time to learn the facts. Don't go without running water another season. Ask your Delco dealer or mail the coupon. No obligation, of course.

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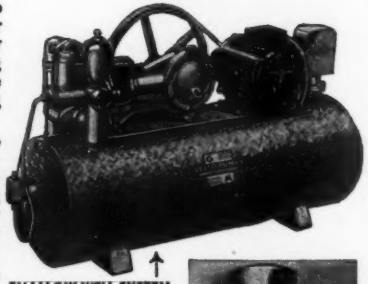

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Please send, without obligation, full information on Delco Water Systems.

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MAIL COUPON TODAY!

Blossom Trippers

Alfalfa growers in the West have puzzled for years on how to set a good crop of seed. It has been a gamble. Now the Utah Experiment Station seems to have found an answer. Stamens and pistils are enclosed by the lower petals of the alfalfa flower which must be broken open before the flower will "trip" exposing the pollen and pistil for fertilization. It has now been discovered that the ground bee cuts the flower to get both the pollen and nectar, trips the flower and fertilizes it. The ground bee is a solitary individual, likes dry alkali soil and sunny weather. Where conditions are right for the bee as well as the alfalfa, there is likely to be a good seed crop.

Yards of Light

(*Here from page 9*)

requires control switches at two or more points. It is possible to control a light from as many points as you desire; extra switches of the proper type and the connecting wires are the limiting factors.

It is not necessary, just because it was installed that way, for a light to be improperly located or improperly controlled. Farm wiring is usually out in the open and is easily added to or changed.

If your yard lighting is not as it should be and does not give you convenience, safety, and protection, then it should be revised with the help of an electrician.

"In this model the record player is connected to the thermostat control in the oven of the electric range."

By JEROME J. HENRY

Some famous "Firsts" in Broadcasting

December 12, 1901—Marconi received first trans-Atlantic wireless signal

January 20, 1910—Caruso's voice picked up from Metropolitan Opera and transmitted experimentally

October 17, 1919—Radio Corporation of America incorporated

November 2, 1920—KDKA broadcast Harding-Cox election results

October 14, 1923—First radio network established

February 8, 1924—First coast-to-coast broadcasting hookup

December 23, 1928—First permanent coast-to-coast network established

February 1, 1929—First scheduled short-wave trans-Atlantic broadcasts

And there's the longest continuous broadcast the coronation of George VI and Queen Elizabeth of England. All the pomp and pageantry of the occasion was described by eyewitness observers of the British Broadcasting Company with special commentary by American representatives. The ceremonies were followed from the time the royal couple left Buckingham Palace until they returned again as King and Queen. Every part of the ceremony was broadcast—the trip to Westminster Abbey, the coronation ceremonies in the Abbey, the royal procession through the streets of London, the return to the Palace, and the appearance of the royal family on the balcony of Buckingham Palace as their tribute to the people of England. The complete broadcast lasted exactly seven hours and one minute without interruption . . . and it was May 12, 1937, 4:45 to 11:46 a.m. EST.

Those "Quiz Kids" Get Around

A Chicago jurist, with the aid of a couple of filling station attendants, was having no luck in making his auto horn work. A half-pint youngster on the sidelines, tired of watching the men struggle, stepped up and suggested a remedy. It worked.

The jurist, highly appreciative, said he thought youngsters of these days were pretty bright. He said, further, that his young helper seemed smart enough to be a "Quiz Kid."

A hard-working Mann is Marion, pretty singer who is heard on as many as a half dozen programs at times. She has sung with Bob Crosby and Jan Garber, and is a steady performer for the "Breakfast Club" and "Club Matinee" programs.

You hear much today about eliminating bottlenecks . . . and the bottleneck of dairying is milking the cows. The countless millions of tiny hand squeezes by means of which much of the milk is drawn from the cows . . . the almost complete lack of good hand milkers . . . the increasingly acute shortage of farm labor . . . these form the bottleneck or "traffic jam" of the entire giant dairy industry.

But you can forever smash this costly bottleneck in *your* barn . . . with the De Laval Magnetic Speedway Milker. It will milk your cows better, faster and cleaner . . . reduce milking time and labor by at least one-half, or milk twice as many cows with the same help . . . increase individual and herd production . . . reduce costs and increase profits.

The De Laval Sterling Milker, a worthy companion to the great De Laval Magnetic Speedway Milker, provides De Laval milking for small herds. The Sterling Pulsator has only two moving parts, gives positive, precise milking speed and action that pleases the cow.

De Laval Sterling single or double units may also be used on any other make of single pipe line installation.

Start right with a De Laval . . . See your De Laval Dealer or mail coupon below.

De Laval World's Standard and Junior Series Separators best for every need and purse. High or low stands. Electric drives furnished for all except No. 1 size.

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State.....RFD.....No. Cows.....

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Over 90% of the world's clipper users own and PREFER STEWART clippers. New anti-friction tension control assures perfect tension between blades for cooler, lighter running—faster, easier clipping. Makes blades stay sharp longer. **The most powerful clipper of its kind ever made.** Lasts longer. Fan-cooled, ball-bearing motor exclusive Stewart design. Completely insulated in the special **EASY-GRIP** handle barely 2 inches in diameter. The finest, most enduring clipper ever made for cows, horses, dogs, mules, etc. *A* $25.00 *value for only* $19.95 complete. Slightly higher West of Denver. 100-120 volts. Special voltages slightly higher. At your dealer's or send $1.00. Pay balance on arrival. Send for FREE catalog of Stewart electric and hand-power Clipping and Shearing machines. Made and guaranteed by Chicago Flexible Shaft Company, Dept. 30, 5600 Roosevelt Road, Chicago, Illinois. *52 years making Quality products.*

buyers' INFORMATION service

YOU, as a reader of this magazine, are entitled to our buyers' information service free of cost. When looking for information about equipment or material that you plan to buy, first read carefully the advertisements in this issue. Then, if you do not find what you want, use the coupon below to tell us what you need and we will forward your request to interested manufacturers.

USE THIS READER SERVICE COUPON

ELECTRICITY ON THE FARM
Reader Service Dept., 24 W. 40th St., New York

Without cost to me, please have manufacturers send complete information on the following Electrically Operated Equipment which I am thinking of buying:

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My name is.....

Address .....

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I get electricity from.....
11-41

The youngster smiled. "Yup, I think so, too!" and strolled away.

One of the station attendants turned to the car owner and remarked, "You gave the right verdict that time, Judge. That bright young button is Jack Beckman—and he *is* a "Quiz Kid."

Early Day Swing

There is nothing new under the sun, says Roy Shields, music director of NBC's central division.

"John Sebastian Bach knew all the hot licks that modern swing bands can produce," he says.

Shields points out that Bach was once called on the carpet by a church board for "sundry perplexing variations in the chorales and intermixing divers strange harmonies so that the congregation is confused."

Saving Pigs

While sows farrow eight or nine pigs as a rule, the average raised to weaning age is only five. The U. S. Department of Agriculture estimates that of the 35 per cent that die or are killed, 9 per cent are laid on, 5 per cent are farrowed dead, four per cent are weak and there are many other causes of losses. If eight are raised to weaning time the cost per pig is about $2. If only four are raised, the cost per pig is $4.

The Kansas Experiment Station has now found that young pigs, especially those that are confined and raised on concrete floors are subject to anemia. This anemic condition is suspected of being caused by a lack of the minerals iron and copper in the sow's milk. A corrective for the condition is to raise the pigs on soil or pasture, or if that is not feasible, to give them sods or earth to root in. The earth supplies the needed minerals.

Since a fairly large percentage are laid on, are weak, or in cold weather are chilled, an electric pig brooder along with soil or grass should help materially in bringing through larger litters and reducing the cost per pig.

Defense Terms

"The farm equipment industry is the machine-tool industry of agriculture." *Joe Tucker, Vice Pres., Oliver Machinery Co.*

WARNER ELECTRIC BROODERS
Defend Chick Profits! Save Money!

WARNER Electric Stock Tank Heater (right) increases milk and meat production. Folder free. Send postal.

Dependable electric brooding at low cost. Reflectors and Chromalox heaters reduce work of raising chicks and poults. APPROVED BY UNDERWRITERS. Many sizes and prices. Write for free folder.

WARNER Electric Pig Brooder (interior view below) Circular Free. Ask!

Prevent Chilling & Crushing. Warner Pig Brooder "fits a corner."

WRITE FOR FREE FOLDERS OR ASK YOUR DEALER, POWER COMPANY, OR R. E. A.

NATIONAL-IDEAL
Toledo, Ohio

Questions and Answers

Electric Sock Mender

▶**Question:** *Recently I've heard of a gadget that would darn socks electrically. It's not a machine attachment but a little electric darner all by itself. I lost the address but a New York store advertised them. It was not very expensive. So please find out where I can get it and how much it will cost.* J. H., Mass.

▶**Answer:** Macy's Store, 6th Ave., New York, sells an electric hosiery mender with a bag of assorted colored patches for $1.86. The patches are cemented or vulcanized on and said to hold for four or five washings. American Vitos Co., Inc., N. Y. City makes small electric reweaving machines. They are expensive and are rented—not sold—to mending establishments.

Lights for Fish Food

▶**Question:** *We would like to know more about the possible success of using light traps to attract insects for fish food over a farm pond containing* 5,000 *Rainbow trout.*
W. A. L., Wash.

▶**Answer:** The only location we know of where lights have been used to attract insects for feeding fish is on the farm of Robert Miles, Woodland, California. We have heard of lights being used elsewhere for the same purpose but we cannot give you any specific results of their use. The only question in my mind about the use of light traps for this purpose is, whether the fish would be attracted to and would thrive on the type of phototropic insects which would be attracted to the light. I know from personal experience that thousands of insects are attracted to lights at certain times of the year and the catch is very large. One can either use electrocutor traps or I imagine, could provide many insects for the fish by merely placing the lamps near the water leaving it to the fish to catch their own food as the bugs strike the water.

Cost to Use Iron

▶**Question:** *Can you tell me approximately how much it costs to burn an electric iron for an hour? My landlady says the cost comes from turning it on, and she was told it cost eight cents every time one is turned on. She seemed to think that running it after it is once hot does not cost much. Is she right?*
M. T., North Carolina

▶**Answer:** Electric irons vary in wattage from 660 to 1000 watts, the light weight irons now on the market using 1000 watts. If you pay 4 cents per kilowatt hour for electricity which is somewhere near the average, this 1000 watt iron will use ½ cent worth of electricity in the first eight minutes it is on. As soon as the iron heats up the thermostat will turn the current off and on to maintain the temperature desired for ironing. The iron will not use more than 4 cents worth of electricity per hour when set at the highest temperature and for most settings will use considerably less than this amount.

Placing Lightning Rods

▶**Question:** *Who can tell me the proper spacing of lightning rods on the enclosed plan? The house is* 100 *ft. long with two* 40 *ft. "L's," a fireplace chimney and three soil pipes extending through the roof. The soil is dried clay and I would have to drill* 30 *ft. deep to get to*

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JET-O-MATIC
CHEAPER TO OWN
NO LEATHERS, DISCS, SPRINGS ETC., TO REPLACE—EVER
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8 OTHER ADVANTAGES OF GOULDS JET "BEST YET"
1. One unit for both shallow well and deep well service. Quickly convertible.
2. Impossible to lose prime.
3. High suction lifts without close clearances.
4. Quiet operation always.
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Please send me the name of the nearest Goulds Distributor. And full information about this new Goulds JET-O-MATIC Water System.
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HOT WATER
when and where you need it!

Hot water is absolutely essential to clean milk! Only hot water will remove that dirty, greasy film of butter-fat that clings to utensils, to make a breeding ground for bacteria! But don't waste time lugging hot water to utensils or utensils to hot water. Use the Surge Electric way and have hot water—always—right where you need it., at remarkably low cost.

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The secret of low cost is low wattage, automatic control and heavy insulation. The Surge has made a big hit with farmers everywhere, because it saves them so much time—when farm labor is so scarce. Write NOW for Free Book "The Magic of Hot Water!"

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PARAGON SYSTEM MAKES HENS PAY

Lighting hen houses to increase winter egg production pays big profits only when the longer days are absolutely regular and uniform. In whatever system you use—morning only; morning and evening, etc., you will find the accurate and dependable

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are money makers and money savers. High class industrial controls, adapted to hen house lighting; approved and used by Exp. Stations, R.E.A., Agric. Coll. Easiest to install—to adjust—to operate. Fully automatic; needs no attention. Priced from $13 up, at dealers or direct. Ask for Bulletin 600 on Poultry Lighting Profits.

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Monarch ELECTRIC and COAL-WOOD COMBINATION RANGES

Today's most popular "high line" range. Built to provide year 'round convenience and comfort in the farm kitchen.

See your "Monarch" retail outlet or—

Write for booklet illustrating complete line.

MALLEABLE IRON RANGE CO.
1241 Lake Street Beaver Dam, Wis.

water bearing sand for a ground. We have buried water lines nearly 10 ft. deep. R. D., Oklahoma

▶**Answer:** The Bureau of Standards, Washington, D. C., puts out a booklet giving a safety code for lightning rod installations. It calls for air terminals or points 12½ to 25 ft. apart on the high points of roofs with additional points on such high structures as chimneys. All of these air terminals and also the protruding soil pipe and any other metal surfaces should be thoroughly bonded together with approved lightning rods. These rods should be grounded at two places outside the building. If your water piping system extends for several hundred feet under ground, that would probably be the best place to ground your lightning protection system.

Refrigerator Defrosting Clock

▶**Question:** *Can one buy a defrosting clock which may be attached to any kind of refrigerator? And if so, are they hard to attach? I have seen only one and that was bought for a special refrigerator, and it was grand. We have a Coldspot.*
Mrs. M. T., North Carolina

▶**Answer:** I understand that an electric defrosting clock is made by the Borg-Warner Corp., Detroit, Mich. It is simple to install, the clock being plugged into the outlet and the refrigerator into the clock.

3450 vs. 1725 RPM Motors

▶**Question:** *Will an electric motor of any given size (speed 3400 rpm) used on jet pumps use more current than a motor of 1750 rpm conventional type? What effect do numerous startings have on current consumed? Will one use more than the other in starting? Will the high speed motor last as long?* D. C., Ind.

▶**Answer:** Motors of the *same type* running at either 3450 or 1725 rpm have practically the same efficiency and therefore, will use the same amount of current for any given horsepower delivered. The starting current will also be approximately the same. There is considerable difference, however, in both the starting current and operating efficiency of *different types* of motors. The capacitor motor is more efficient than a split phase motor, and some split phase motors use less current than others which are built cheaper. The high speed motor will have approximately the same life as the lower speed motor.

Motors will use from two to five times the amount of current in starting that they do in running. The starting period is usually very short, however, so unless the motors are started and stopped many times an hour, the starting will not build up the consumption greatly.

Perpetual Motion

▶**Question:** *I am going to ask you a question that I have been asking for quite some time and for which I still have no answer. Why can't a generator be made to generate electricity to feed an electric motor which in turn shall be the constant driving force and also feed the various circuits it is meant for? Why use gasoline or diesel or other various means of driving said generator? What I would like to know is exactly what happens, why and what takes place to stop the generator. I understand that friction and heat eventually stop them, but nobody knows just where this friction takes place or where the heat comes from.*
S. B., New York

▶**Answer:** If you will meditate over your question, you will realize that

Want to pick chickens quick? buy a KLEEN-PICK Electric Powered POULTRY PICKER

Driven by a ¾ or 1 h.p. electric motor depending upon size. In use from Maine to California. Approved by leading poultry farmers and dressers. Picks at any scald. Write for free circular, "Profits with Picking Machines," and tell us number of chickens or turkeys picked weekly.

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STOP *COLD* WEATHER INVASION

ADD TO YOUR **Winter Income** with **Trumbull Water Warmers**

You'll get more eggs, less work, and bigger profits when you use our electric water warmers. Water is needed to make eggs; when frozen, production drops. The Trumbull warmer keeps water drinkable in coldest weather.

Ask your dealer about CASH contest or write today.

THE BIG GUN FOR MORE WINTER EGGS

THE TRUMBULL ELECTRIC MFG. CO.
1012 Woodford Ave. Plainville, Conn.

if the thing you ask for were possible, you would have perpetual motion—or the creation of energy. While it is possible to change the form of energy from say coal to heat and then to electricity, no one has yet found a way to *produce* energy. A motor driving a generator will not produce as much electricity as is used to run the motor. The difference in the energy input and output is lost largely in heat of friction of the bearings, wind friction and from actual heating of the wires in the motor and generator by the electric current. An efficient motor-generator set may deliver 80 per cent as much power as is put into it.

Cost of Scalding Broilers

Question: *Will the cost of heating water with electricity be too great to use for scalding broilers? We only dress on about three evening a week so I'm afraid an electric hot water heater would be too expensive.* G. E. P., Ill.

▶**Answer:** It is difficult for me to answer the question whether electric water heating would be too expensive. It depends somewhat on your electric rate and the amount of electricity you are now using. There are other advantages in electric scalding, however, than just heating the water. Thermostats control the water temperature at the proper point for the semi-scald process which leaves the skin of the broilers in good condition and appearance. The water is also kept heated while it is being used. The convenience, the quality of the job and the time saved are also important factors in the operation. Many poultrymen use electric water heaters and scalders and would not be without them.

Ice vs. Milk and Eggs

(*Here from page* 8)

100 gallons of water in building. Used 33 kw-hrs.

Arthur Jesse Farm, Storm Lake, Ia. Four weeks last January. Temp 5° below zero to 25° above. Six foot round wood tank, outside, covered with shiplap. Used 58 kw-hrs.

George Stockdale, Superintendent of Pocahontas County R. E. Co-op., Iowa, wrote that a 14 foot round wood tank was kept free from ice during January and February when temperature ranged to ten below with a power consumption of 10 to 12 kw-hrs per day or an average of 150 to 200 kw-hrs per month.

Fireproofing Christmas Trees

A recent "Technical Note, No. 250" from the U. S. Forest Products Laboratory, Madison, Wisconsin, states that the best fireproofing for spruce and balsam fir Christmas trees is to keep them in a pail of water from the time they are cut, or as soon thereafter as possible, until they are discarded. Water was better than chemical treatments in keeping the trees fire resistant, and it also keeps the needles green and prevents dropping.

Drinks Click

Elmer Wheeler, a farmer out in Indiana, heard a clicking sound in his water pipes after he installed a dozen drinking cups at his cow stalls. Every time a cow drank, the pipes clicked. As he sat reading his paper in the evening, he was surprised at the number of times the drinks "clicked." He decided that the cows liked water with their alfalfa hay just as he did after eating dry crackers. He noticed also that the cows did better. Now additional drinking cups are being installed so every cow will have one.

The Aire-Matic "90" Cleans High and Low with Speed and Ease

Premier's All-Purpose Cleaner

One cleaner that cleans all around the house, from top to bottom—that's Premier's cylinder-type Aire-Matic! It's full-sized and full-powered for thorough cleaning of rugs and carpets . . . compact and lightweight for easy handling in cleaning upholstered furniture, moldings, draperies, and hard-to-reach places. Its 7 convenient attachments make it a specialist for all your cleaning jobs. The Aire-Matic "90" is the answer to today's cleaning needs.

Only $44.50 *Complete*

A PREMIER FOR EVERY PURSE—EVERY PURPOSE!

Premier manufactures all types of vacuum cleaners in all price ranges. There's a Premier cleaner or combination of cleaners that will meet your cleaning needs and your budget requirements as well!

PREMIER

PREMIER DIVISION, ELECTRIC VACUUM CLEANER CO., INC.
1734 Ivanhoe Road • • • Cleveland, Ohio

Please send me complete information and literature on: ☐ The Premier Aire-Matic "90"; ☐ other Premier cleaners. Also send me names of nearest Premier dealers.

Name.....

Address.....

City.....*State*.....

What's New

Names and addresses of manufacturers of the articles described in this column will be furnished upon request to What's New Department, ELECTRICITY ON THE FARM, *24 West 40th Street, New York, N. Y.*

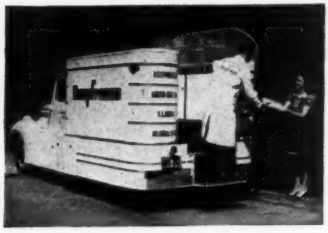
Emergency Sub-Station

Of interest. This is a complete portable electric sub-station for use in case of lightning or other damage

to sub-stations. It may be pulled to any location by a tractor to "pinch-hit." It does not generate power,—just steps it down from high voltage for use on distribution lines.

Frozen-Food Deliveries

Another piece of equipment of interest is this truck with two standard frozen food cabinets mounted on it



for rural or city delivery of frozen foods. The truck has an electric power plant which delivers current to the compressors of the freezing cabinets.

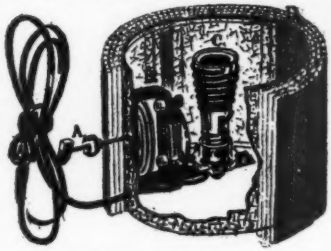
Crisp Toast Maker

Here is a toaster for folks who like toast crisp. It will make it soft, too, if you prefer. There are two adjustments: the button at the left adjusts the brownness of the toast by regulating the maximum heat to which the bread is subjected. It is controlled by a thermostat which is held against the bread. A slight turn of the crisper button on the right regulates the length of time the bread remains in the toaster before the "popper - upper" pops 'er up. If you want hard toast, the current comes on and off, browning and drying the bread until it pops up.

Or if you want soft brown toast, set the controls for "dark" and "soft" and it gets a good, quick toasting and up it comes. With a little practice one can make toast to suit everybody. Price $14.95.

Poultry Water Warmer

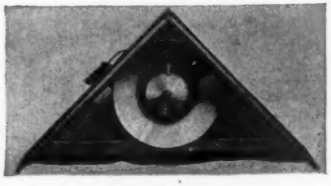
This water warmer for poultry drinking fountains made according to specifications in Cornell Circu-



lar No. 759 has a 100 watt, 115 volt, screw-base replaceable heater "C", a temperature control "B" with outside adjustment "A," and insulated housing "D." The inner metal cylinder is 7 in. in diameter and 6 in. high. Has 8 ft cord and plug. Water container is placed on top of the heater. Temperature may be adjusted to that desired. Will use perhaps 15 to 20 kw-hrs. per month. Price $3.50. Plus 10 per cent tax.

Electric Pig Brooder

This 40"x40"x56" brooder is made of 1" wood side walls and heavy insulation board top with 12¼" steel angle legs. The 220-watt



Chromalox ring heating element is supported inside a reflecting shield. It has an adjustable snap-action temperature control switch and is equipped with removable denim curtains and 8 ft. heavy appliance cord. Made for use in the corner of a farrowing pen.

Frequency Modulation Combinations

Several new 11 and 12 tube radio-phonograph combinations have been announced. They have push-button

tuning which may be set for either standard broadcast or frequency-modulation stations. The phonograph has an automatic record changer and permanent point sapphire stylus. Prices up to $250.

CLASSIFIED ADVERTISING

MODERNIZE ELECTRICALLY! Complete poultry farm supplies: Infra-Red Ray Brooders, Thermostats, 150 items. *Free 52 page Catalog.* Parts & Plans for building your own brooder. Write today! LYON ELECTRIC COMPANY, Dept. EF., Greensboro, N. C., or San Diego California.

VIKING ELECTRIC HAMMER MILLS grind feed fresh daily while you do other chores. No tending—works automatically. Low cost, terms, 30 days trial. Write VIKING MFG. CO., Dept. E., Jackson, Mich.

GET YOUR FREE COPY NOW. Bussey 100-page book for Poultrymen. Low Factory Prices. Parts for electric brooders and batteries; heating assemblies; wire Fabrics; Poultry Department. Save money. BUSSEY PEN PRODUCTS, 5171 West 65th St., Chicago.

POULTRY TIME SWITCHES pay for themselves in increased egg production. Five models from $3.95 to $18. All-electric or manually wound. With or without dimmer circuit. Write for information. AUTOMATIC ELECTRIC MANUFACTURING CO., Mankato, Minnesota.

MAKE MONEY WITH TURKEYS. Read America's oldest turkey magazine. Learn newest methods brooding, feeding, confinement growing, dressing, marketing. One year $1.00; five months 50c. Turkey World, Desk 233, Mount Morris, Ill.

FUN FOR ALL—the whole family can take part in this contest. CASH PRIZES will be awarded for the best suggestions for a last line to complete the verse at the bottom of this page.

What Would YOU Say?

Rhyme Contest

AWARDS SEPTEMBER CONTEST

for the last line of this verse:

Electric Power is just the thing
To ward off Housemaid's knees
Try it when you clean next spring
.....

FIRST PRIZE—$20 Cash

No stoop, No squat, No sneeze.
WM. LEE BURROWS,
R.F.D. 3, Box 171, St. Louis, Mo.

SECOND PRIZE—$5 Cash

It will "switch out" dirt with ease.
AUDREY ALTENBURG,
R. 2, Chana, Ill.

Five Consolation Prizes—$3 Each

Re-volt ere good health flees
MRS. HELEN P. SATTERFIELD,
R.F.D. 4, Fairview, W. Va.

'Twill both your mind and labors ease.
MRS. EDW. R. SCHERBARTH,
R.F.D. 1, Box 297, Milwaukee, Wis.

It's "Extra Hands" for R.F.D.'S!
MRS. HARRY WITTMUS,
R.F.D. 1, Fort Crook, Neb.

It turns off tasks like Hercules.
HUGH GWYN COLE,
R.F.D. 3, Dardanelle, Arkansas.

Tasks are "lightened!" Drudgery flees!
SETH A. WILSON,
R.F.D. 1, Fenton, Illinois.

HONORABLE MENTION

The following names are deserving of honorable mention for the lines submitted:

Mrs. H. G. Woodard, R.F.D. 1, Box 573, Everett, Wash.; Mr. Karl Dittmer, R.F.D. 2, Holgate, Ohio; Emma D. Metz, R.F.D. 1, Kent, Ohio; Mrs. James Prentiss, Leahey Ave., So. Hadley, Mass.; Mrs. W. H. Davis, R.F.D. 3, Ash Grove, Mo.

NOVEMBER CONTEST RULES: Seven cash prizes will be awarded for the best last line to complete the verse in the coupon below. Your suggestion should rhyme with the second line.

The first prize will be $20 cash; the second prize, $5.

In addition, five consolation prizes of $3 each will be awarded for the best last line furnished.

In case of a tie, each winning contestant will receive the full cash prize to which he or she is entitled.

All members of the farm family to whom this magazine was sent may enter, but each contestant may submit only one line.

Question "A" must be answered.

Entries should be sent to the Contest Editor, ELECTRICITY ON THE FARM, 6 No. Michigan Avenue, Chicago, Illinois, and must be postmarked before November 30. The decision of the judges is final and all entries become the property of ELECTRICITY ON THE FARM.

Winning names and entries will be announced in the January issue.

Send your entry on the coupon or make out a similar form on a plain sheet of paper or government postcard.

An electric hover would save the hen bother
Of brooding her chicks night and day.
Why work like the dickens, just brooding some chickens

My suggestion for a fourth line to the above verse is:

.....

.....

(a) Please fill in manufacturer's name of any of the following electrical machines you own.

Range _____	Milking Machine _____
Refrigerator _____	Chick Brooder _____
Vacuum Cleaner _____	Feed Grinder _____
Water Heater _____	Water Pump _____

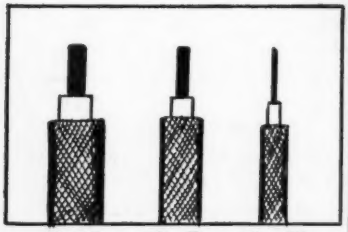
My name is.....

R.F.D..... Post Office.....

County..... State.....

I get electricity from..... (11-41)

Are You BOGGED DOWN?



"The bigger the wire the more traffic it will carry."

ELECTRIC WIRES are like roads . . . the narrower the road or the smaller the wire the less traffic each will carry. Either may be full of sink holes!

Are you operating your electrical equipment "Country Road" style? Overloaded wires mean overheated motors, blown fuses, dimming lights and wasted current.

Your wiring system may be due for a check-up. Your Electric Company representative will be glad to help you. Get set for the Fall and Winter heavy load months. No bog down this Winter!

ASK YOUR ELECTRIC COMPANY

or your electrical equipment dealer if you need further information. Or, if you prefer, address your inquiries to ELECTRICITY ON THE FARM, 24 West 40th Street, New York, or 6 No. Michigan Avenue, Chicago.

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